

## ADJUSTABLE TUNING TUBE FOR A CLARINET

## BACKGROUND OF THE INVENTION

### 3 1. Field of the Invention

4 The present invention relates to a wind instrument, and more particularly  
5 to a tuning tube for a clarinet.

## 6 2. Description of Related Art

7 With reference to Figs. 9-10, a clarinet (60) has a top end (61) with a first  
8 cork (not numbered) mounted in the top end (61). A tuning tube (70) has a lower  
9 chamber (72) defined at a lower portion thereof and an upper chamber (71)  
10 defined at an upper portion thereof. The top end (61) of the clarinet (60) is  
11 received in the lower chamber (72).

12 An upper tube (80) has a lower end (81) with a second cork (not  
13 numbered) mounted in the lower end and received in the upper chamber (71) of  
14 the tuning tube (70). A mouthpiece (82) is mounted on a top end of the upper  
15 tube (80).

16 When a keynote of the clarinet (60) is sharp, the tuning tube (70) is  
17 pulled upwards to lower the pitch. When the keynote of the clarinet (60) is flat,  
18 the tuning tube (70) should be replaced with another tube (not shown) shorter  
19 than the tuning tube (70) to raise the pitch, which is a very inconvenient way to  
20 tune the clarinet (60).

Moreover, during pulling the tuning tube (80), the second cork on the upper tube (80) is easily damaged. The mouthpiece (82) needs to be adjusted after tuning, so the processing is very complex. Furthermore, there is a large space (62) between the tuning tube (70) and the top end (61), so condensed water

1 etc will accumulate in the space (62) and airflow through the clarinet (60) will  
2 become uncontrollable, which is not good for the performance.

3 Therefore, the invention provides an adjustable tuning tube for a clarinet  
4 to mitigate or obviate the aforementioned problems.

5 **SUMMARY OF THE INVENTION**

6 The main objective of the present invention is to provide a tuning tube  
7 for a clarinet which is easy to be adjusted and will not accumulate condensed  
8 water from a performer's breath.

9 Other objectives, advantages and novel features of the invention will  
10 become more apparent from the following detailed description when taken in  
11 conjunction with the accompanying drawings.

12 **BRIEF DESCRIPTION OF THE DRAWINGS**

13 Fig. 1 is a perspective view of an adjustable tuning tube for a clarinet in  
14 accordance with the present invention;

15 Fig. 2 is an exploded perspective front view of the adjustable tuning tube  
16 in Fig. 1;

17 Fig. 3 is an exploded perspective back view of the adjustable tuning  
18 tube;

19 Fig. 4 is a front view of a clarinet assembled with the adjustable tuning  
20 tube of the invention;

21 Fig. 5 is a partially sectional front view of the adjustable tuning tube  
22 mounted on the clarinet;

23 Fig. 6 is a cross sectional view of Fig. 5;

24 Fig. 7 is a partially sectional front view of the adjustable tuning tube in

1 adjustment;

2 Fig. 8 is a cross sectional view of Fig. 7;

3 Fig. 9 is a partially sectional view of a clarinet assembled with a  
4 conventional tuning tube; and

5 Fig. 10 is a partially sectional view of the conventional tuning tube being  
6 pulled upwards.

7 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

8 With reference to Figs. 1, 2, 3, and 5, an adjustable tuning tube (10) for a  
9 clarinet in accordance with the invention is composed of an outer tube (20) and  
10 an inner tube (30) received in the outer tube (20).

11 The outer tube (20) has a lower chamber (21) defined at a lower portion  
12 thereof, a first upper chamber (22) defined at an upper portion thereof, and a  
13 middle portion (not numbered) between the lower chamber (21) and the first  
14 upper chamber (22). An arcuate slot (23) is transversally defined at an outer  
15 periphery of the middle portion of the outer tube (20). An opening (24) is defined  
16 in a face defining the arcuate slot (23) and through the outer tube (20). The face  
17 defining the arcuate slot (23) further has a recess (25) defined beside the opening  
18 (24). A resilient member (251) is mounted in the recess (25).

19 A button (26) has a middle part pivotally mounted in the arcuate slot  
20 (23), a finger (not numbered) formed at a first end thereof and extending through  
21 the opening (24) into the outer tube (20), and a second end (not numbered)  
22 abutting the resilient member (251). Multiple first teeth (261) are formed at an  
23 inner wall of the finger of the button (26).

24 Two sliding grooves (28) are longitudinally defined in an inner wall of

1 the middle portion of the outer tube (20) and at two diametrically opposite sides.  
2 A pin (27) is radially inserted through one of the sliding grooves (28) in the outer  
3 tube (20).

4 The inner tube (30) has an upper part received in the upper chamber (22),  
5 a lower part (not numbered) received in the middle portion of the outer tube (20).  
6 An O-ring (29) is provided between the middle portion of the outer tube (20) and  
7 the lower part of the inner tube (30). A second upper chamber (31) is defined at  
8 the upper part of the inner tube (30). Multiple second teeth (32) are formed at the  
9 lower part of the inner tube (30) and match the first teeth (261). The lower part of  
10 the inner tube (30) further has two ridges (33) respectively formed at two  
11 diametrically opposite sides of an outer periphery thereof and received in the  
12 grooves (28). An elongated slot (34) is longitudinally defined in one of the ridges  
13 (33) and the pin (27) is inserted in the elongated slot (34). Thus, the inner tube  
14 (30) is longitudinally movable about the outer tube (20) by the ridges (33) sliding  
15 along the grooves (28) but not freely disengaged from the outer tube (20) by the  
16 pin (27).

17 With reference to Figs. 1, 4, 5, and 6, when the adjustable tuning tube  
18 (10) is assembled on a clarinet (40), a top end (41) with a first cork (not  
19 numbered) of the clarinet (40) is received in the lower chamber (21) of the outer  
20 tube (20), and a lower end (51) with a second cork (not numbered) of an upper  
21 tube (50) is received in the second upper chamber (31) of the inner tube (30). The  
22 upper tube (50) has a mouthpiece (52) provided thereon.

23 In adjusting, as shown in Figs. 7 and 8, the button (26) is pressed at the  
24 second end thereof to disengage the first teeth (261) from the second teeth (32),

1 so the inner tube (30) can be moved upwards or downwards about the outer tube  
2 (20) to lower or raise the pitch. Thereafter, the button (26) is released, and the  
3 first teeth (261) are engaged with the selected second teeth (32) to fix the inner  
4 tube (30) in the outer tube (20).

5 Therefore, according to the present invention, it is very easy for a user to  
6 tune the clarinet with various pitches. In this embodiment, a maximum tunable  
7 pitch can be above a quarter of halftone. Moreover, there is a little space between  
8 the outer tube (20) and the inner tube (30), so the condensed water will not  
9 accumulate in the space and the user can easily control airflow through the  
10 clarinet (40) for performance.

11 It is to be understood, however, that even though numerous  
12 characteristics and advantages of the present invention have been set forth in the  
13 foregoing description, together with details of the structure and function of the  
14 invention, the disclosure is illustrative only, and changes may be made in detail,  
15 especially in matters of shape, size, and arrangement of parts within the  
16 principles of the invention to the full extent indicated by the broad general  
17 meaning of the terms in which the appended claims are expressed.